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Federal Communications Commission
Office of Secretary

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22 October 1996

William F. Caton, Acting Secretary
Federal Communications Commission
Washington, D.C. 20554

DOCKET FILE COPY ORIGINAL

In re: **Notice of Written Ex Parte Communication**
CC Docket Nos. 92-115, 94-48 and 93-116 (The Part 22 Rewrite)
FCC Rule Section 22.919 - Modification of Cellular Electronic Serial Numbers

Dear Mr. Caton:

This letter is to advise that on this date I sent, via email, to Mr. Gordon Coffman, an employee in the Enforcement Division of the Wireless Telecommunications Bureau,¹ a copy of an article I wrote regarding the referenced subject matter. A copy of the email message is attached hereto.

Pursuant to Section 1.1206(a)(2) of the FCC Rules and Regulations, 47 C.F.R. § 1.1206(a)(2), an original and one copy of this letter are being tendered for in the public record for the referenced proceeding.

Kindly direct any questions or correspondence concerning this matter to the undersigned.

Very truly yours,



Robert J. Keller

cc: Mr. Gordon Coffman

¹ While it is not believed that Mr. Coffman is considered decision making personnel for purposes of the referenced notice-and-comment rulemaking proceeding, this notice is being filed out of an abundance of caution.

X-Sender: rjk@his.com
Date: Tue, 22 Oct 1996 11:55:15 -0400
To: GCOffman@fcc.gov
From: Bob Keller <rjk@telcomlaw.com>
Subject: Lunch

Gordon,

I have an 11:30 appointment, so virtually impossible for me to get down there in time for lunch. But ... here is the promised article:

IF CELLULAR CLONES ARE OUTLAWED, ONLY OUTLAWS WILL HAVE CELLULAR CLONES:
A Critical Review of the FCC Prohibition on Modification of Cellular
Unit Electronic Serial Numbers
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Among the many rule changes and amendments included in the Federal Communications Commission's recent "re-write" of Part 22 of its regulations (the section of the FCC rules governing common carrier mobile radio services, e.g., paging, cellular, etc.), is a new Section 22.919 of the Rules. The new regulation, which became effective on January 2, 1995, provides that every cellular telephone must have a unique electronic serial number ("ESN") that may not be modified by any person for any reason after the unit leaves the factory.

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Section 22.919 of the FCC Rules and Regulations
47 C.F.R. § 22.919:

22.919 Electronic serial numbers.

The Electronic Serial Number (ESN) is a 32 bit binary number that uniquely identifies a cellular mobile transmitter to any cellular system.

- (a) Each mobile transmitter in service must have a unique ESN.
- (b) The ESN host component must be permanently attached to a main circuit board of the mobile transmitter and the integrity of the unit's operating software must not be alterable. The ESN must be isolated from fraudulent contact and tampering. If the ESN host component does not contain other information, that component must not be removable, and its electrical connections must not be accessible. If the ESN host component contains other information, the ESN must be encoded using one or more of the following techniques:
 - (1) Multiplication or division by a polynomial;
 - (2) Cyclic coding;
 - (3) The spreading of ESN bits over various nonsequential memory locations.
- (c) Cellular mobile equipment must be designed such that any attempt to remove, tamper with, or change the ESN chip, its logic system, or firmware originally programmed by the manufacturer will render the mobile transmitter inoperative.
- (d) The ESN must be factory set and must not be alterable, transferable, removable or otherwise able to be manipulated in the field. Cellular equipment must be designed such that any attempt to remove, tamper with, or change the ESN chip, its logic system, or firmware originally programmed by the manufacturer will render the mobile transmitter inoperative.

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The stated purpose of the rule is to prevent or reduce fraud that results from the "cloning" (programming a legitimate ESN into a fraudulent unit in order to illegally access a cellular system). But the scope of the regulation goes further and has thus engendered much controversy. No one argues with the proposition that it ought to be illegal to clone cellular phones for the purpose of stealing service or fraudulently accessing cellular accounts. As written, however, Section 22.919 also precludes clearly nonfraudulent uses. It is a violation of Section 22.919, for example, to clone your ESN into a second unit to serve as an "extension" phone, even though you have no intention of using both units at the same time and are willing to pay all usage costs generated by both units. It is also a violation for your own cellular carrier to program the ESN of your broken phone into a loaner unit while repairs are made. Even cellular equipment manufacturers are concerned that the regulation is so narrowly drawn that many design features built into cellular phones are arguably in technical violation.

It is not always easy to compose statutes or regulations that include the targeted conduct or situation without also unwittingly encompassing things having nothing to do with the matter at hand. Such problems are frequently addressed after the fact by "interpretation" of the law. The legislative or regulatory history is studied to determine the intention of the law's authors. Should this process not be applied to Section 22.919? Would it not be reasonable to assume that, because the purpose of Section 22.919 is to prevent cellular fraud, the Commission certainly could not have intended by it to proscribe nonfraudulent cloning? Well, there is good news and there is bad news. The good news is we don't have to guess at the FCC's intention. All the right questions were put to and answered by the Commission before the regulation was adopted. The bad news is the FCC's answers to those questions make very little common sense.

ESN modification and cellular cloning was a hot issue during the rulemaking proceeding in which the current version of Section 22.919 was adopted. There was no argument with the need to adopt legitimate regulatory measures to address cellular fraud, and there was no objection to rules that prohibited the cloning of cellular phones or the modification of ESNs for fraudulent purposes. But commenters specifically urged the FCC not to draw the rule so narrowly that it precluded either modification or "emulation" of ESNs in order to create nonfraudulent "extension" phones. The Commission considered and squarely rejected these arguments, stating:

"[T]he ESN rule will not prevent a consumer from having two cellular telephones with the same telephone number We note that Commission rules do not prohibit assignment of the same telephone number to two or more cellular telephones. It is technically possible to have the same telephone number for two or more cellular telephones, each having a unique ESN. If a cellular carrier wishes to provide this service, it may."

Thus, with the stroke of a pen the Commission gave the cellular carriers an effective monopoly on the provision of cellular extension phones.

The third party programmers of extension units, outlawed by Section 22.919, typically charge a flat fee to program the second phone. With the adoption of Section 22.919, however, many cellular carriers have started to offer two or more phones on the same number—but they are imposing monthly fees in the \$17 to \$30 range for this optional service. At those rates many users may decide it is better to simply buy a second cellular account—and the critics say that is exactly what the cellular carriers intend.

The Commission also expressly considered and rejected suggestions that the scope of Section 22.919 be narrowed to permit ESN modification by manufacturers and authorized repair centers. The Commission responded to such suggestions as follows:

"[C]omputer software to change ESNs, which is intended to be used

only by authorized service personnel, might become available to unauthorized persons through privately operated computer 'bulletin boards'. We have no knowledge that it is now possible to prevent unauthorized use of such software for fraudulent purposes."

That shows how wide of the mark the Commission's thinking is on this whole issue. Can the FCC--the agency attributed with expertise in electronic telecommunications matters--actually believe that by making it unlawful to modify ESNs they will prevent thieves from acquiring the means to do so? Are they really ignorant of how relatively simple (not necessarily inexpensive, but simple) it is to clone an ESN?

There is an entire underworld industry for the laundering of stolen ESNs. The foot soldiers set up their sniffing monitors at airports, convention centers, busy highway interchanges, etc., and collect thousands of ESNs off the air from unwitting cellular users. The numbers are programmed into cellular phones and put on the street through a black market network. The units are frequently recognized as fraudulent and deactivated within days or even hours of their deployment, but not before many hours cellular airtime and long distance usage (potentially including extensive international long distance) have been misappropriated. Canceling the fraudulent account is easy-- finding the fraudulent unit and its user is not. The Commission certainly can not believe that such a lucrative operation is going to be hampered in the least by an FCC regulation making it unlawful to modify ESNs. The perpetrators of these cloning schemes knowingly and willingly assume the risk of violating many criminal statutes with potential penalties far more serious than non-compliance with an FCC policy.

Section 22.919 can not rationally be excepted to have any significant effect on cellular fraud. It does, however, unnecessarily restrict totally nonfraudulent uses by honest members of the public. It also gives the cellular carriers a monopoly on the provision of cellular "extension" phones. This is a curious ruling for an agency that recently has been using "competition" as a mantra. Over the past few decades the FCC has consistently struck down telephone company tariff provisions that preclude uses of the telephone service that are privately beneficial to the subscriber without being harmful to the network or other users. Arguably, Section 22.919 fails under that test!

The final chapter has not yet been written. The Commission received several petitions for reconsideration and clarification of Section 22.919. The matter is still under consideration, and a decision is expected shortly. If the FCC does not adopt significant modifications to the rule, an appeal to federal court may be mounted by some industry players. In the meantime, the regulation remains on the books--an obstacle to honest users, but an entirely insignificant, if even noticed, "finger shaking" at the crooks.

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Section 22.919 in all of its technical detail was adopted in late 1994 and did not officially become effective until January of 1995. The FCC has had a policy prohibiting ESN modification, however, since the earliest incarnation of its cellular regulations. Below is the full text of an FCC Public Notice explaining the policy as it existed prior to adoption of Section 22.919.

PUBLIC NOTICE
FEDERAL COMMUNICATIONS COMMISSION
Common Carrier Public Mobile Services Information
Report No. CL-92-3
October 2, 1991

CHANGING ELECTRONIC SERIAL NUMBERS ON CELLULAR PHONES IS A VIOLATION OF THE COMMISSION'S RULES

It has come to the attention of the Mobile Services Division that

individuals and companies may be altering the Electronic Serial Number (ESN) on cellular phones. Paragraph 2.3.2 in OST Bulletin No. 53 (Cellular System Mobile Station - Land Station Compatibility Specification, July, 1983) states that "[a]ttempts to change the serial number circuitry should render the mobile station inoperative." The 1981 edition of these compatibility specifications (which contains the same wording) was included as Appendix D in CC Docket 79-318 and is incorporated into Section 22.915 of the Commission's rules.

Phones with altered ESNs do not comply with the Commission's rules and any individual or company operating such phones or performing such alterations is in violation of Section 22.915 of the Commission's rules and could be subject to appropriate enforcement action.

Questions concerning this Public Notice should be addressed to Steve Markendorff at 202-653-5560 or Andrew Nachby at 202-632-6450.

- FCC -

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